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ABSTRACT

A study observing children's participation in designing their own classroom space was based on the following framework: (1) creation of the environment and conditions necessary to enable children to express themselves constructively in a climate of acceptance; (2) support of children's need to prove and confirm their own abilities; (3) strengthening of the dynamics of the relations which develop among children of various ages when they cooperate in groups with a common goal and vision; and (4) establishment of the perspective needed by children so that they can obtain an integrated aesthetic perception and approach, through individual and group experiences, of a substantial intervention to shape, organize, and manage their own space. Children ages 3 through 5 attending 20 kindergarten and day care centers in Greece were observed as they played a "puzzle game" involving geometric shapes that represented their classroom. Findings included: (1) younger children tended to follow their own separate planning activities, while older children participated more in group planning; (2) space transformation and creation of multiple alternative solutions were usually first achieved by some of the children before becoming a kind of conquest by the whole group; (3) time spent completing a task varied from group to group and was dependent on the interest the activity presented for the children; (4) children in both free and participatory activities arranged or rearranged space according to their personal needs and aesthetic preferences; these preferences were expressed as pleasure in what they had achieved; and (5) a variety of forms of cooperation and mutual help were observed among children. (Includes a brief description of a planned follow-up study. Contains approximately 30 references.) (EV)

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**A SYSTEM FOR THE EXPANSION AND DEVELOPMENT OF
 SCHOOL INTO A SPACE OF CONSTRUCTIVE
 ENGAGEMENT
 FOR CHILDHOOD AGE CATEGORIES**

**7th European Conference
 on the
 Quality of Early Childhood Education**

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TITLE OF THE PAPER :

"A system for the expansion and development of school into a space of constructive engagement for three childhood age categories"

ABSTRACT

DEFINITION OF THE PROBLEM

- Approach of the New Education and New Schools (*Dewey, Kerschensteiner, Herrmann, Lietz*) with emphasis on the expansion of the school toward external spaces under a different viewpoint.
- Correlation of the real world with the symbolic world of the school.
- A critical problem in the kindergarten is the relation between real experiences and corresponding concepts, indispensable in today's scientific and technological world, and vice versa (*Piaget, Vygotsky*).
- Questions posed by the Design theories, such as the approach by the children to the principles of Morphology and Planning of the school space itself as well as of additional spaces (yard, nearby areas), using materials which offer correlations between the real and the aesthetically Beautiful.

THEORETICAL FRAMEWORK

- Principles of Design and anthropological/anthropometrical approaches of a timeless kind.
- The need to adapt school dimensions to anthropometrical dimensions (relation between the child's body and the space and objects).
- Creation of an aesthetic concept in the child through individual and group experiences.
- School /man /objects, three mutually complementary units, which are useful keys in a changing society.

RESEARCH METHODS

- At 20 kindergartens of the Thessaloniki area, the above theoretical principles were translated into materials that were used inside the school, thus enabling the children to place themselves into spaces created by them for their own needs.
- The concepts of doubling, tripling and apposition of similar or different objects and forms were used.
- Photographic recording of the children's activities, enabling the on-the-spot observation to be complemented by a subsequent comparative study.
- Recording how the children observe, deal with and solve individual problems in space (dimensions, movement in space, volumes, mobile elements) in a climate of action research.

MAJOR FINDINGS

- Constructive rearrangement of space in accordance with the scattered prescientific concepts available to children and the individual aesthetic situations they experience.
- Use of objects and space to represent emotional situations or impressions from the outside world, as transformed by the children.
- Acquisition by the children of the capacity to transform space and create alternative solutions and proposals as well as of the parallel capacity to transform objects of experience into utilitarian objects and pedagogical tools.
- Acquisition by the children of an analytic and synthetic concept of space and its individual elements as a way of mathematical thinking, aesthetic harmony and symmetry as well as of satisfying functional needs.

EVALUATIVE CONCLUSION

Comparative correlation of individual activities with holistic accomplishments, so that the validity of action research can be investigated and vice versa.

IMPLICATIONS FOR PRACTICE

- The holistic approach and the materials arising from research have formed a system of applying the Design theories into preschool education.
- The system was transplanted into a village near Kastoria Lake in Northwestern Greece, where the local authorities arranged a given area next to the lake as an expansion of the constructive activities by the kindergarten and the school.
- Planning of space construction and individual equipment (children's tables, chairs, toys, decorative elements), adaptation of utilitarian objects for uses related to the engagement and recreation of children in sectors of the social, educational and cultural life.

A system for the expansion and development of school into a space of constructive engagement for three childhood age categories

Clarifications and Definitions

A principal characteristic of the changing society of our age is the need to broaden the information sectors, so that the changes can lead to a learning society.

The process of participation in the Planning and Design of a Built Environment is an integral part not only of the learning society but also of the democratic responsibility of the individual who matures only by acting and participating in the process of the shaping of that space and not merely by using it.

The following view is thus defined as a fundamental goal: i.e. that spaces (environment) in which we live, move and develop our activities form the learning spaces of early childhood not only through their operation and use but mainly through our participation in the process of shaping and maintaining them (Roger A. Hart, 1987).

Following the methodologists of the New Pedagogics Eduard Claparède (1873-1940), John Dewey (1859-1952) and Georg Kerschensteiner (1854-1932), the concept of the expansion of the school beyond its internal space (into the yard, the neighbourhood and the community) has been formulated. This concept has found practical applications through the New Schools of Cecil Reddie in England, E. Demolins in France and Hermann Lietz in Germany (Frangos Chr., 1985).

According to Adolphe Ferrière, one of the fundamental elements of the New Schools is that they must be located outside the city so that children can learn how to work with their hands, think critically and connect the real world with the symbolic world of the school (Röhrs Hermann/Lenhart Volker, 1995). It has been pointed out that, especially during early childhood, there is an important relation between real experiences and the corresponding concepts on today's scientific and technological world, according to the views presented and analyzed mainly by J. Piaget and L. Vygotsky.

Similar views have been presented on an aspect of the kindergarten which

may have been neglected so far, but is, nevertheless, of great importance, i.e. the area of DESIGN. My presentation will make a greater use of the theories of DESIGN without neglecting the pedagogical views referred to earlier.

My presentation will focus, in particular, on the training of children inside school, anticipating the expansion of the school into the yard and the nearby spaces, i.e. the connection of the school with social activities. This connection requires, however, a framework for the planning and support of the children's integration into those activities.

Remarks on a Theoretical Connection

According to the considerations of the ethnographical and anthropological positions, as well as those of the symbolic interactionism which places a great emphasis on participant observation and on discovery, the material means of everyday life and the demonstration materials of the school, as well as the built-up space itself, are the strong, concrete bases for the buildup of theoretical positions, not the other way round (Peter Woods, 1988).

According to my own observations in kindergarten, the principles of Design which possess the greatest interest are those using anthropometric approaches, as they have been defined by masters of Art and Architecture (such as Leonardo da Vinci, 1500 and Le Corbusier, 1951) as well as by contemporary analysts of Design and Ergonomics (such as Eskild Tjalve, 1978 and E. Grandjean, 1963).

Those analysts have spoken about the interaction between objects and human beings, thus approaching what is called in Pedagogical Analysis "interaction between the real and the conceptual" through the process of symbolic interactionism. According to these principles of Design, man employs his own interactions with objects to discover and define the fundamental needs which he is called to fulfill when creating and producing objects or shaping his own space. Through this interaction, man operates with perspectives, on the one hand, and with constant recourse to feedback, on the other.

In all those processes of morphological nature, a very important role is played by geometric forms and concepts, as formulated by classical geometers, in connection with aesthetic considerations on harmony, symmetry, order or disorder (from Pythagoras through Hermann Weyl, 1952).

Thus, when working with very young children, we start from these specific relations (small/large, wide/long, etc) and subsequently approach geometric definitions in connection with preharmonic relations and combinations, in an attempt to establish a theoretical connection and a legitimate link between the Pedagogical and the Design considerations.

Aims and Pedagogical Implications

The framework of the research to be presented is based on the following goals:

- a. the creation of the environment and conditions necessary to enable the children to express themselves constructively in a climate of acceptance of that expression by the adults
- b. the support of the children's need to prove and confirm their own abilities
- c. the strengthening of the dynamics of the relations which develop among children of various ages when they cooperate in groups with a common goal and vision
- d. the establishment of the perspective needed by the children so that they can obtain an integrated esthetic perception and approach, through individual and group experiences of a substantial intervention to shape, organize and manage their own space.

The mode and method of that intervention will be determined through the presentation of alternative solutions and proposals for specific spaces, by rearranging the objects and equipment of any particular space in accordance with the intended use of the space and the requirements of the children.

We believe that the implementation of the alternative solutions by the children themselves will also strengthen their understanding of the primary idea of the Planning and Design of space and space dimension (Roger A. Hart, 1987).

The analysis and synthesis of space, with its individual elements as a mode of mathematical thinking, esthetic harmony and symmetry, as well as the satisfaction of functional needs through a qualitative (non-random) intervention, will furnish the possibility and dimension needed by the children in order to create on their own within a framework of principles and criteria.

The efforts to activate and integrate the children into tasks of constructive and productive nature (figurative and applied) furnish not only a pedagogical but also social/political dimension, which is indispensable to the upbringing of children with multiple interests.

The operation of the objects to be produced by the constructive engagement of the children both as objects for everyday use and objects of decorative nature for indoor and outdoor spaces, creates a pedagogical framework for the identification, investigation and solution of problems (Richard E. Mayer, 1947).

Those problems have to do with the selection and use of various materials, as well as with the modes and methods in which they can take shape and form; to a greater extent, however, they have to do with the functional aspect of spaces and utilitarian objects, their relation to the people who use them and the symbolic dimension they acquire in a society.

In addition to the joy and satisfaction of creation, the children's productive activity reinforces their feeling of social participation and consciousness; at the same time, it helps reduce the intensity of their consumer desires.

Providing the young children with opportunities to constructively experience cultural principles and values creates the conditions necessary for the children themselves to become the sustainers and carriers of culture.

Their active participation in the social and cultural activities of the community, neighbourhood and broader area of their own school will integrate the children into a developmental path to reorganize space and the possibilities it offers for education, constructive engagement, games and amusement.

Methodological Approach and Sample

As mentioned previously the methodological positions used for this research in kindergartens of the larger area of Thessaloniki during a two-year interval are very close to the anthropological approaches initiated by E. Boas, 1940) and given modern dimensions through ethnographical approaches (see (a) Nobuo Shimahara, 1988 (b) Sally Hutchinson, 1988).

Those positions were reformulated into a new synthesis using the methodological approaches of contemporary analysts of Design.

In the framework of this research, the observations were conducted by myself and by a considerable number of collaborators (students) in the following activities:

- a. self-constructive expression by children: observations of children who place themselves into spaces created by themselves for their own needs
- b. introduction of children into pregeometric syntheses and principles of morphology: observations of children who are urged to create using geometric forms or syntheses which include doubling, apposition, repetition and free morphological synthesis.

At this stage of the research, the sample used includes children of age three (3), four (4) and five (5), who attend 20 kindergarten and daycare centres.

In most cases, the children who participated in the activities were from all three age groups; that made it possible for the observers to record the results as a function of the child's age.

To enable the children to engage and familiarize themselves with geometrical forms, the two forms chosen were the square and a square-shaped GRID (canavos). This type of engagement was known to the children from the "puzzle" game and there was the following correspondence:

GRID /ground plan of the space→ "puzzle"

square forms/chair, table→elements/parts of the "puzzle".

After they have been given explanations on the correspondence with the ground plan of a space and the placement of chairs and tables on it, the children go on to create their own syntheses on the GRID. The dimensions of the squares chosen are 0.30, 0.60, 0.90, 1.20, 1.80, 2.40, as a reference to a given system of proportions which produce an arithmetic esthetic relation, but are principally functional and ergonomic magnitudes, distances and heights, both of the space and the equipment

- e.g.
- 0.30 cm: height of a child's chair
 - 0.60 cm: height of a child's table
 - 0.90 cm: width of an aisle
 - 2.40 cm: height of a room, etc

Research Materials

The materials used in research include:

- a. the detailed recording by the participating observers of the social

and the school environment, the description of the specific child group as well as the correlation between children, on the one hand, and forms and objects, on the other

- b. photographic representations of the recordings and the spaces where children engage in activities, mainly showing correlations on various levels between children, on the one hand, and the objects and the development of their activities, on the other
- c. the recording of basic parts of their activities on video tape
- d. discussions between observers and children in a free format, aiming at an explanation of the children's behavior in the specific activities (Piagetian clinical discourse)

First Findings and Discussion

The first findings given by the two-year long research just presented were as expected on various levels. We can thus say that we have some main products from this research and some subproducts, too.

We describe in the following the first theses which arose out of this research:

- 1) A basic differentiation between the younger (3-4 year old) and the older (4-5 year old) children was observed. This differentiation was mainly observed in the participation in group work. Thus, the younger children tended to separate themselves more easily from their own class activity group, preferring to follow their own, separate planning (Frangos Chr., 1996).

However, this was not the case when the activities were highly demanding or involved a lot of movement (moving small pieces of furniture or objects). This observation is in agreement with Vygotsky's view that younger children tend to follow their own, separate planning, whereas older children (5-6 year old) can participate in joint systematic planning.

- 2) Space transformation and creation of multiple alternative solutions though various morphological compositions in it were usually first achieved by some of the children before becoming a kind of conquest of the whole group.
- 3) The time spent for completing a task or solving a problem varied from group to group (within the same class) and was dependent upon the interest the activity presented for the children. Quite often a group

which lagged behind in a task gained experience from the other groups for its completion.

- 4) Many experiences are transformed into a kind of a pedagogical tool through stimulation of their imagination of children and finally into objects of everyday use (Tony Bertram, 1995).
- 5) The comparison of paintings made by the children with paintings by well known artists (Klee, Mirò) was favourably accepted by them. Children were delighted to discover that some elements from their own figurative creations were used by artists too.
- 6) Children both in free and participatory activities arranged or rearranged space according to their personal needs and esthetic preferences. These preferences were expressed with a kind of joy and pleasure for what they had achieved. In their creations one could distinguish some underlying pre-scientific concepts.
- 7) A variety of forms of cooperation and mutual help were observed among children, e.g. when a child completed a task, suggested what another child should do to complete it.

Evaluative conclusion

The assessments made by the participant observers suggest that social requirements sought by the research are in accordance with Shimahara's views about the existence of positive qualitative validity.

The ethnographic assessments of the results by various observers who conducted the same activity in a variety of Kindergartens show a satisfactory reliability at first sight. However, a further elaboration of all these evaluations is required and for this reason they should be taken as mere indications.

Implications for practice

The above procedures and the first findings encouraged me to proceed to the planning of a concrete proposal within the framework of a broader scientific project titled "Arrangement of a network of outdoor spaces for constructive engagement and recreation at the Community of Mavrothori, Kastoria" under the scientific responsibility of the colleague, Associate Professor Dimitris Germanos. Mavrothori is a village in the region of Macedonia situated by the lake of Kastoria.

The studies submitted in the framework of the project have already been

approved and in the months to follow the implementation stage is going to start.

The part of the project relevant with the findings of my research and the planning that followed is to be implemented in the space next to the school premises (Kindergarten- Primary School) on an area of approximately 2000 sq.m.

The space is designed for three childhood age categories:

- a) children from 5-8
- b) children from 8-12
- c) adolescents from 12-15.

The project applied the basic principles of the research, as well as its first findings. It consists in the following:

- spatial arrangement and lay-out of the outdoor space
- constructions on the area with possibility of space transformation or rearrangement depending on the priorities to be set by the children themselves.
- creation of preconditions for co-operation and mutual support of children, adolescents and adults
- Combination of creative activities, production of objects of everyday use or decorative use and playing for participation in sociocultural or educational events of the village community.
- Intervention to the space - from its creation to its operation- by the groups of children both on decision making level and at the level of implementation.
- Integration of historical, social, cultural and traditional elements into the process of planning, design and implementation of an idea.
- Preference for the local materials which are easy to find, handle and maintain in order to familiarise children with them and promote their use in the future.
- Connection of the school community with the daily life of the village community through an ongoing and constructive planning which will follow the changing society and will prepare children to build their environment according to the dictates of their time, their needs as members of a society and the perspective they want to give to the future.

I will conclude my presentation by simply saying that "The child is an active being whose energy is based on freedom, and freedom means initiative, spontaneity, responsibility" (Decroly Ovide, 1930). Researchers, educators, let's pave the way for children to conquer this freedom.

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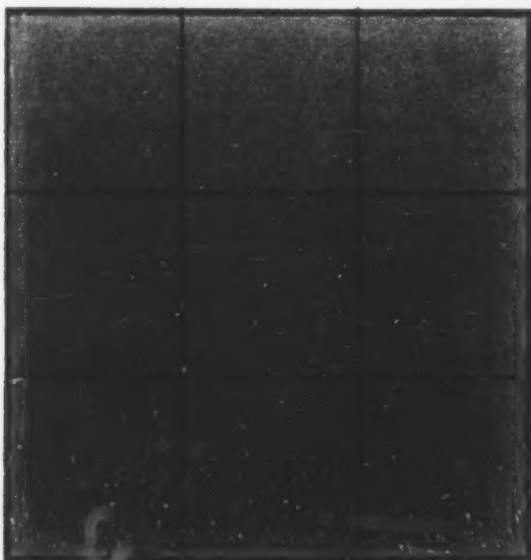
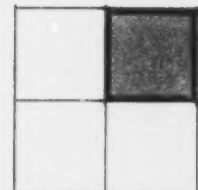
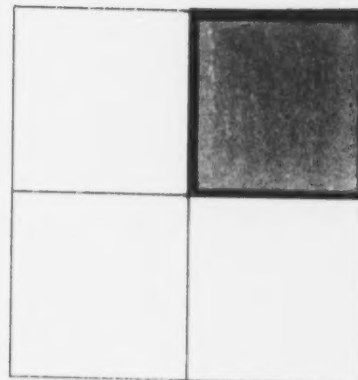
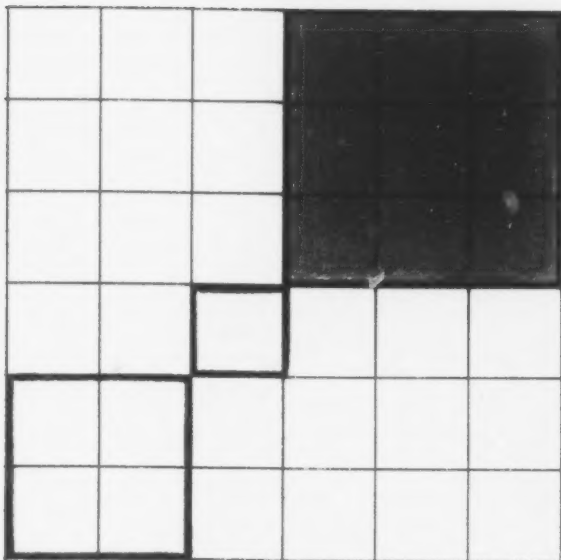
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The square form with dimensions 30cm x 30cm and its multiples as a starting element to synthesize space and constructions



SQUARE'S PROPORTIONS

- 30 cm → height of a child's chair (for children 5-7 years old)
- 60 cm → height of a child's table (for children 5-7 years old)
- 90 cm → width of an aisle
- 1,20 cm → length of a desk for two children
- 1,80 cm → height of a man
- 2,40 cm → height of a room



A



B

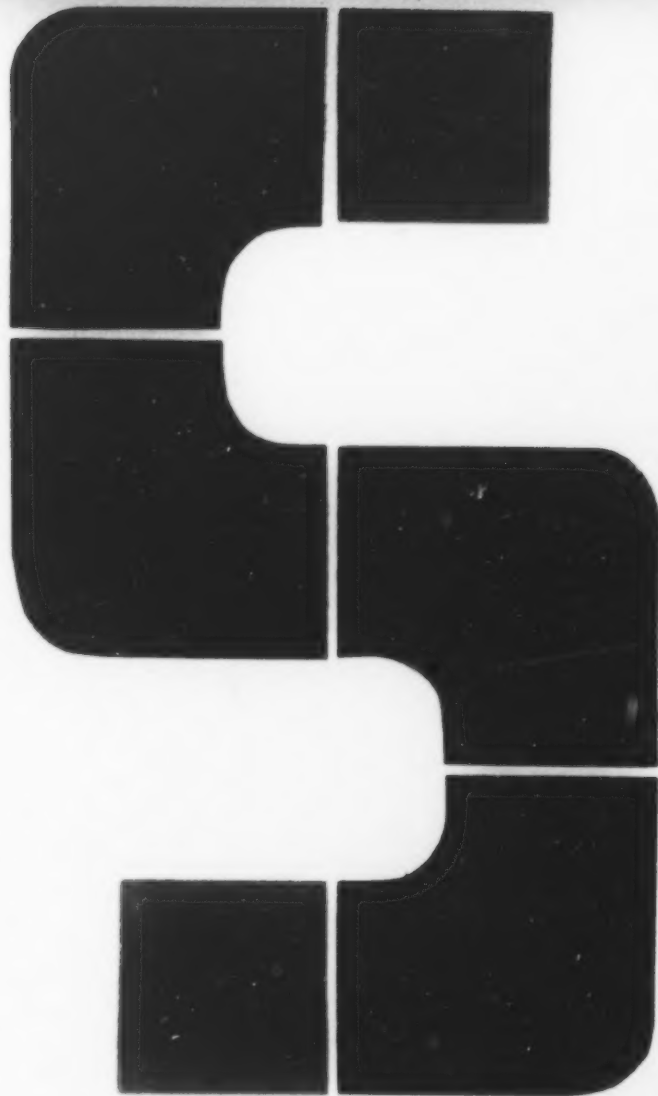
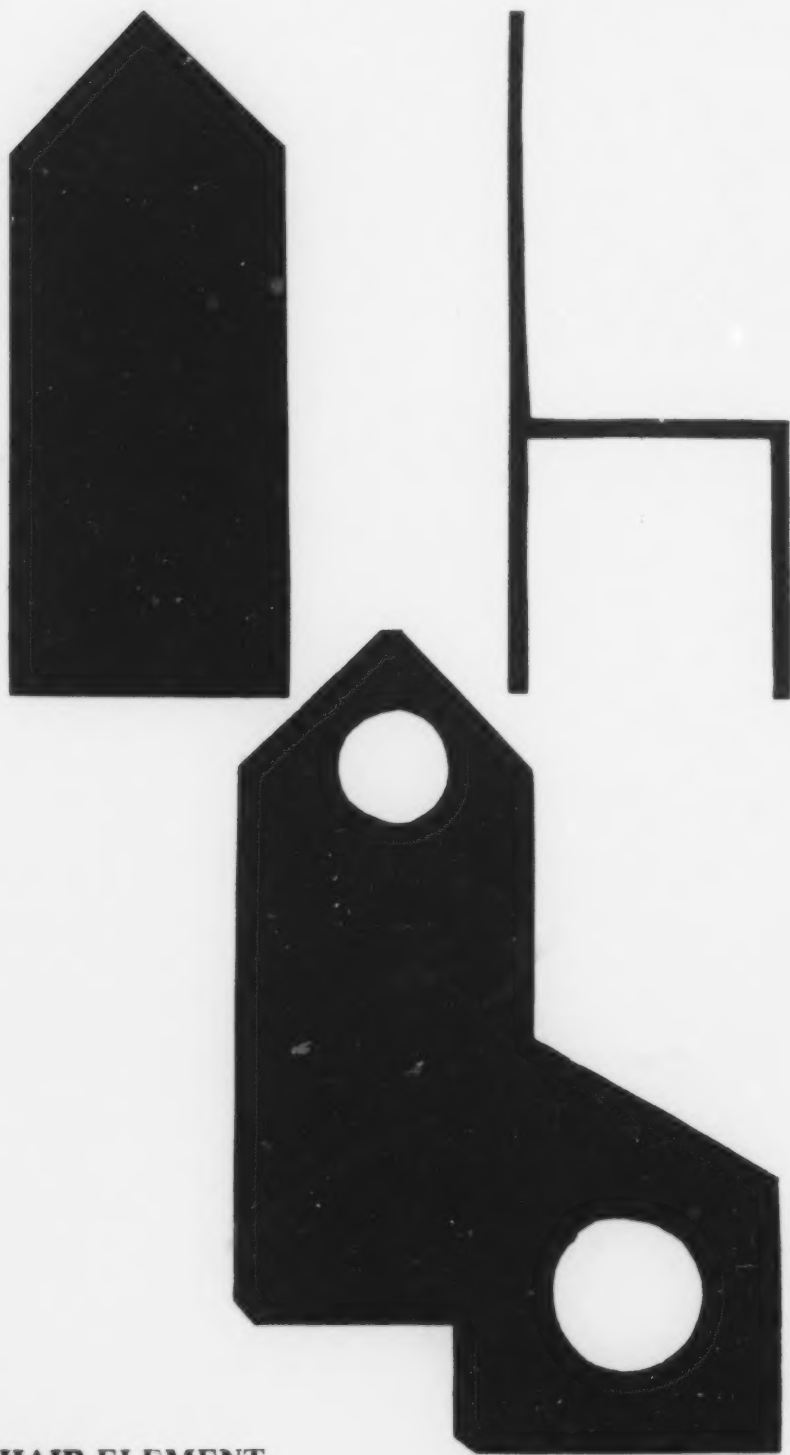


TABLE ELEMENT

A) 90cm x 90cm

B) 60cm x 60cm





CHAIR ELEMENT

PUZZLE GAMES on a 60cm x 60cm grid

